CP225511

Virtual Reality with Inventor

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Advanced Solutions

Learning Objectives

- Learn How to Use Virtual Reality to Expand Product Sales
- Workflow Between Inventor and 3DS Max Interactive
- Using Forge for Virtual Reality
- Using Virtual Reality for all Aspects of the Design Process.

Description

This class will show how we can take native Inventor files into 3ds Max Interactive to be able to harness the virtual reality capabilities within the software.

Speaker(s)

Ron Jones -

As a kid, I was known for taking apart toys, electronics, and even my first computer, all to understand what makes them work. That kid is now an accomplished adult who specializes in helping companies use Autodesk software to its full ability. I still take things apart, only now it's called reverse engineering... I currently reside in Carmel, Indiana with my fiancé and Labrador Retriever "Juice". Previously I've worked as a Product Engineer in the automotive industry, Mechanical Designer in the automation industry, and an Applications Engineer in the compressed air industry. My educational background is in engineering and drafting from Purdue University. I am professionally certified in Autodesk Inventor Professional, Autodesk Fusion 360 and an Autodesk Certified Instructor.

What is Virtual Reality?

Virtual Reality is an interactive computer-generated experience, taking place within a simulated environment. This environment can be similar to the real world, or completely fictional, creating an experience that is not possible in physical reality. Current VR technology largely relies on headsets, commonly in combination with props, or controllers. VR dates back to the 1860's and has drastically evolved over time. In the 1970's VR evolved into simulators for; flight, medical, and even the military. Fast-forward to today, VR is evolving and becoming a staple in our lives. Pilots log hundreds, if not thousands of hours in VR simulators. We rely on these experiences to train pilots on situations that could potential cause a loss of life. With VR technology we are able to virtually walk buildings before ground has even been broken. A similar change is happening in the manufacturing space, VR is now available to the manufacturing industry to evaluate designs, view the manufacturing floor, and even drive sales though an immersive product experience.

The Sensorama, one of the first VR devices was released in the 1950's

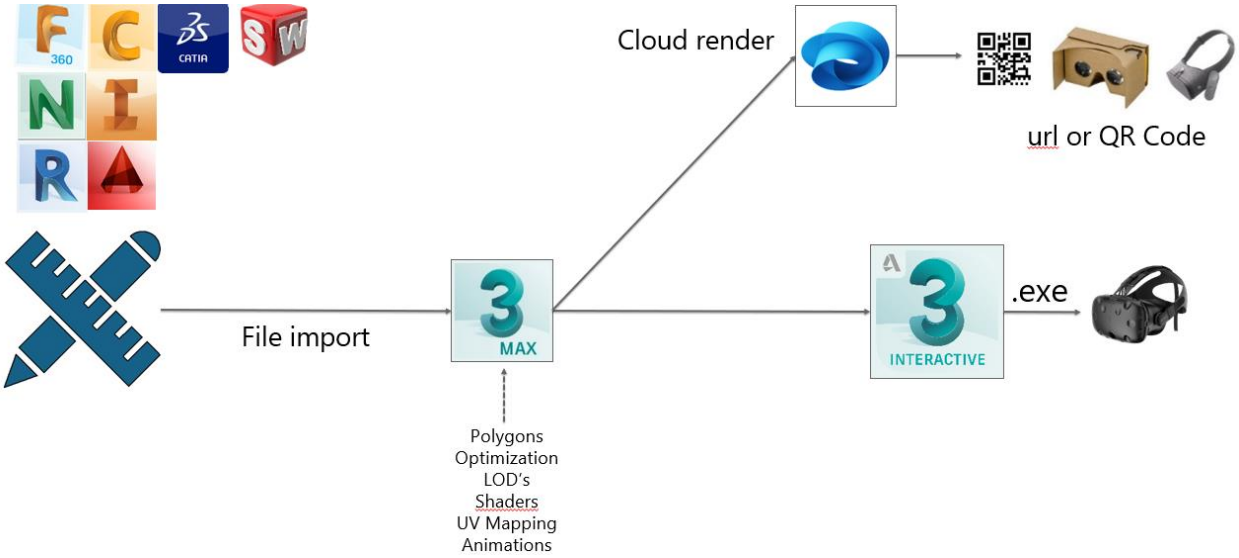
Types of VR Devices

Virtual Reality has vastly changes how we live our lives. We've come to rely on things like flight simulators to train pilots, or even critique their decisions. If you recall the "Miracle on the Hudson" back in 2009, arguably one of the greatest miracles in air travel history. The flight crew as judged on their decisions based on virtual reality simulations conducted by officials. VR devices used to be limited to major companies and the government, now VR is becoming a staple in our homes. With both Play Stations and Xbox's having VR components the market has expanded greatly. VR is now even available for your Smart Phone, allowing an immersive experience on the go. Instead of the need for 'VR caves' we can now utilize the electronics we use every day for this experience.

Value of VR for Manufacturing

Although most manufacturing VR applications won't involve a flight simulator, there is a significant amount of value that can be found implementing VR within the design process, or for post manufacturing processes. With the addition of 3DS Max Interactive to the Product Design and Manufacturing VR workflows become incredibly simple. An immersive experience such as VR makes it possible to see errors faster and earlier in the design process. Taking the widget you just designed and viewing it through an Oculus or Vive allows full visibility to any possible defects or manufacturing errors because chips are cut. We also have to consider the WOW factor, from a pre-sales perspective there's something to be said about walking a customer through the product they are purchasing before it's been created. Taking it to another level

product training could even be provided through VI, thus eliminating the need for training machines, and the logistics associated with them. I actually have customers using VR content for trade shows, instead of coordinating a semi load of products, they setup a few VR headsets and allow customers to experience their breath of products, all from one computer and headset. If that's not the future of making things I don't know what is.



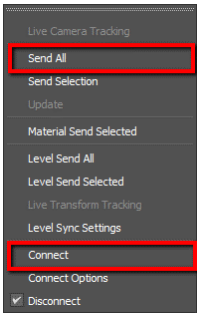
CAD to VR Workflow

Taking CAD models into a VR environment has never been simplifier. Using the Product Design and Manufacturing Collection, cross product workflows are easy. Using Inventor, 3DS Max, and 3DS Max Interactive, we can quickly take 3D CAD files into a VR environment.

To start this workflow will begin by importing the file inside of 3DS Max. Using the 

command we can select a number of both Autodesk native, and non-native file types, including Catia, Solidworks, and neutral files like .step, and .iges. Once the model is imported Max can be used to assign materials, lighting, and even animations. Giving us the ability to make our CAD files interactive. For instance, adding a button, or the ability to remove a cover.

You'll notice a tab at the top called Interactive. In order to send these files over to VR we will need to establish a link to Max Interactive. First, we will need to open 3DS Max Interactive, you can do this by selecting Interactive>Connect. Once a connection has been established, we will want to use the send command. This will send all of the Max data into the Interactive environment.



Once Inside of Max Interactive we will define what template we want to use. Desktop VR can be used as a starting point for both Oculus and Vive. Once the file is opened inside of Interactive you should be looking at the model that was sent from Max. there is a library available to adding additional content such as vehicles or furniture.

Now its just a matter of exporting a package for a VR device or establishing a connection to the VR headset. You can establish a connection with a VR device by going to Window>Connections. Alternatively, to create a deployment Window> Connections. Now you're ready to use VR for your design process!

Helpful Links

First Look: An All-New 3ds Max to VR Workflow:

https://area.autodesk.com/blogs/the-3ds-max-blog/bruno-landry-talks-vr-in-3ds-max/

3D to VR: The Essentials

https://area.autodesk.com/tutorials/series/3d-to-vr-the-essentials1/